

PROVALOV, A.V.; TRET'YAKOV, O.A.; SHESTOPALOV, V.P.

Experimental study of the diffraction of electromagnetic waves on  
double metal gratings. Zhur. tekhn. fiz. 39 no.1:186-188 Ja '64.  
(MIRA 17:1)

1. Khar'kovskiy gosudarstvennyy universitet imeni A.M.Gor'kogo.

L 6350-66 EWT(1) GG

ACC NR: AP5020368

SOURCE CODE: UR/0141/65/008/003/0552/0560

AUTHOR: <sup>44, 55</sup>Tret'yakova, S. S.; <sup>44, 55</sup>Tret'yakov, O. A.; <sup>44, 55</sup>Shestopalov, V. P. 44  
84

ORG: <sup>44, 55</sup>Kharkov Institute of Mining Machinery, Automation and Computer Engineering  
(Kar'kovskiy institut gornogo mashinostroyeniya avtomatiki i vychislitel'noy  
tekhniki)

TITLE: The investigation of <sup>21, 44, 55</sup>electromagnetic waves by an electron beam moving inside  
a ring waveguide

SOURCE: IVUZ. Radiofizika, v. 8, no. 3, 1965, 552-560

TOPIC TAGS: phase recording, phase shift analysis, electromagnetic wave phenomenon,  
waveguide propagation, waveguide transmission, cylindric wave harmonic analysis

ABSTRACT: An exact solution is obtained for the problem of electromagnetic wave ra-  
diation that is produced during the movement of a monochromatic electron beam inside  
a ring waveguide. The waveguide consists of an infinite periodic sequence of iden-  
tical metallic cylinders with a electron beam moving along the axis. In the analy-  
sis a cylindrical system of coordinates is taken and it is assumed that the electron

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UDC: 621.372.8.09

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ACC NR: AP5020368

beam consists of a continuously distributed charge with a complex amplitude. The electromagnetic field vectors are determined as functions of modified Bessel functions of the first and second kind. The final expressions for the electromagnetic field show that it has the nature of a symmetric  $E$ -wave. The field coefficients are obtained by subjecting the electric and magnetic field intensities to the boundary conditions at the surface of the ring waveguide. It is assumed that the tangential electric field approaches zero at the metallic rings and that the field is continuous at the slits. The coefficient of the external field is defined by a system of equations which has been encountered before in the investigation of electromagnetic wave diffraction by flat metallic screens. After transformations the solution is represented in the form of linear algebraic equations. The analysis of the radiation conditions shows that the electromagnetic field produced by the beam consists of an infinite number of spatial harmonics, each of specific frequency and phase velocity. The energy characteristics are established as the flux of complex power  $S$  passing through a unit surface area of the cylinder of radius ' $r$ ' per unit time and averaged out over its length. Conditions for the first spatial resonance are considered. These are satisfied when the negative value of the first harmonic is radiated. Physically, this means that for the negative first harmonic, the field over a region of several periods does not depend on  $z$  and the radiation from the slit of

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ACC NR: AP5020368

the waveguide is in phase. An expression is derived for the radiation energy when the first harmonic is negative. Orig. art. has: 36 formulas and 1 figure.

SUB CODE: EC,GP/ SUBM DATE: 09May64/ ORIG REF: 006/ OTH REF: 003

nw

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L 3827-66 EWT(1) GG

ACCESSION NR: AP5017659

UR/0109/65/010/007/1233/1243

539.124.175

AUTHOR: Tret'yakov, O. A.; Tret'yakova, S. S.; Shestopalov, V. P.

TITLE: Radiation of electromagnetic waves by a beam of electrons traveling over a diffraction grating [Reported at the 3rd All-Union Symposium on Wave Diffraction, Tbilisi, Sep 64]

SOURCE: Radiotekhnika i elektronika, v. 10, no. 7, 1965, 1233-1243

TOPIC TAGS: electromagnetic wave generation

ABSTRACT: A rigorous solution is offered of the problem of electromagnetic waves generated by an idealized unbounded flat monochromatic beam of electrons traveling, at a constant speed, over a diffraction grating; the latter consists of infinitely thin metal strips of arbitrary width. As the beam represents a periodically charged plane, the unknown radiation is conveniently described by a Fourier series. By specifying exact boundary conditions for the field, Fourier coefficients are determined. The resulting boundary electrodynamic problem is reduced to a Riemann-Gilbert problem. The latter's solution yields an infinite

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system of linear algebraic equations for the Fourier coefficients (radiation spectrum), which is very convenient for handling by computer. The results permit determining the electromagnetic field at any point, with a specified accuracy, for any relation between the wavelength, grating period, and strip width. General formulas for the electromagnetic field can be used for determining the connection between the wavelength and the direction of radiation. "The authors wish to thank F. G. Bass<sup>44</sup>, V. I. Gayduk<sup>44</sup>, S. P. Kapitsa<sup>44</sup>, K. I. Krylov<sup>44</sup>, M. I. Kuznetsov<sup>44</sup>, G. Ya. Levin<sup>44</sup>, A. S. Tager<sup>44</sup>, and A. M. Kharchenko<sup>44</sup> for a useful discussion." Orig. art. has: 3 figures and 50 formulas.

ASSOCIATION: none

SUBMITTED: 31Jul64

ENCL: 00

SUB CODE: EM

NO REF SOV: 003

OTHER: 003

*mlr*  
Card 2/2

TRET'YAKOVA, S.S.; TRET'YAKOV, O.A.; SHESTOPALOV, V.P.

Radiation of electromagnetic waves by electron beams moving through  
a circular wave guide. Izv.vys.ucheb.zav.; radiofiz. 8 no.3:552-560  
'65. (MIRA 13:8)

1. Khar'kovskiy institut gornogo mashinostroyeniya, avtomatiki  
i vychislitel'noy tekhniki.

TRET'YAKOV, O.A.; CHEBOT'NIKOV, V.I.

Controlling the radiation from a plane-parallel layer by means of  
metal gratings. Part 2. Opt. i spektr. 18 no.2:284-294 F '65.  
(MIRA 18 4)

TRET'YAKOV, O.A.; TRET'YAKOVA, S.S.; SHESTOPALOV, V.P.

Radiation of electromagnetic waves by an electron beam moving above  
a diffraction lattice. Radiotekh. i elektron. 10 no.7:1233-1243 J1  
'65. (MIRA 18:7)

TRET'YAKOV, O.A.

Emission of a charged particle moving above a diffraction grid. Radio-  
tekh. i elektron. 10 no.7:1343-1346 J1 '65. (MIRA 18:7)

L 15275-66 EWT(1)/EWP(1) IJP(c) AT

ACC NR: AP5028293

SOURCE CODE: UR/0022/65/018/005/0090/0096

AUTHOR: Baregamyán, V. A.; Tret'yakov, O. A.; Chernyakov, E. I.; Shestopalov, V. P.

ORG: Yerevan State University (Yerevanskiy gosudarstvennyy universitet); Kharkov Institute of Mining Machine Building. Automation and Computing Technology (Khar'kovskiy institut gornogo mashinostroyeniya, avtomatika i vychislitel'noy tekhniki)

TITLE: Radiation from a stream of electrons moving parallel to a metal grid located on the edge of a uniaxial crystal of finite thickness

SOURCE: AN ArmSSR. Izvestiya. Seriya fiziko-matematicheskikh nauk, v. 18, no. 5, 1965, 90-96

TOPIC TAGS: particle physics, electron radiation, dielectric material, electron beam

ABSTRACT: The authors give a strict solution for the problem of radiation from a beam of electrons moving above the surface of an anisotropic dielectric of finite thickness with a grating. It is assumed that a grid made up of metal bands is applied to one of the surfaces of a plane-parallel layer of anisotropic dielectric

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L 15275-66

ACC NR: AP5028293

material (a uniaxial crystal) with a given permeability. A formula is derived in the form of a Fourier series for the proper electromagnetic field of the electron beam. Conditions are determined under which radiation takes place in the crystal and in free space. Orig. art. has: 22 formulas.

SUB CODE: 20/

SUBM DATE: 15Feb65/

ORIG REF: 004/

OTH REF: 001

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Card 2/2

L 21720-65 EWT(1) IJP(c) GG/AT  
ACC NR: APG004875

SOURCE CODE: UR/0057/66/036/001/0033/0038

AUTHOR: Tret'yakov, O.A.; Chernyakov, E.I.; Shestopalov, V.P.

ORG: Khar'kov Institute of Mining Machine Construction, Automation, and Computing Technology (Khar'kovskiy institut gornogo mashinostroyeniya, avtomatiki i vychislitel'noy tekhniki)

TITLE: Radiation of electromagnetic waves by an electron sheet moving above a diffraction grating

SOURCE: Zhurnal tekhnicheskoy fiziki, v. 36, no. 1, 1966, 33-38

TOPIC TAGS: diffraction grating, electron beam, electromagnetic radiation, electromagnetic wave diffraction

ABSTRACT: The authors discuss the radiation of an infinite plane sheet of electrons moving at constant velocity parallel to a plane diffraction grating. The grating is assumed to consist of an infinite sequence of infinitely long rods of rectangular section with their axes in the x-y plane and parallel to the x axis of a rectangular Cartesian coordinate system xyz. The dimensions of the rods are assumed to be  $2(L-d)$  in the y-direction and  $2h$  in the z direction, and the rods are assumed to be separated by the distance  $2d$ , so that the grating constant is  $L$ . The electrons are assumed to move in the plane  $z = p$  with constant velocity in the y direction, and the density of the sheet is assumed to be proportion to  $\exp[i(ky - \omega t)]$ , where  $i$  is the imaginary

UDC: 538.561

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L 21720-66

ACC NR: AP6004875

unit,  $k$  and  $f$  are constants, and  $t$  is the time. The wave radiated by the electron sheet is diffracted by the grating. The diffracted wave is expanded in a series of partial waves and an infinite set of linear equations is derived for the expansion coefficients. These equations were solved with the aid of a computer for different values of the grating parameters, Poynting's vector was calculated for the case that only a single diffracted wave is radiated approximately normally to the grating, and the results are presented graphically. The calculations were checked by comparison with those of Z.S.Agranovich, V.A.Marchenko, and V.P.Shestopalov (ZhTF, 32, 381, 1962) for the case  $h = 0$ . It is shown that the maximum power is radiated when  $L/d$  is approximately 5, that resonant increase of the radiated power occurs when  $2h$  is a multiple of half the wavelength, and that the radiated power increases rapidly with decreasing distance between the electron sheet and the grating. Orig. art. has: 20 formulas and 4 figures.

SUB CODE: 20/

SUBM DATE: 03Mar65/

ORIG REF: 003/

OTH REF: 003

Card 2/2

L 41756-66 EWT(1) GG	SOURCE CODE: UR/0141/66/009/002/0341/0350
ACC NR: AP6011919	
AUTHOR: <u>Tret'yakov, O. A.</u> ; <u>Chernyakov, E. I.</u> ; <u>Shestopalov, V. P.</u> 59 B	
ORG: <u>Khar'kov Institute of Mining-Machine Construction, Automatics, and Computer Engineering</u> (Khar'kovskiy institut gornogo mashinostroyeniya, avtomatiki i vychislitel'noy tekhniki)	
TITLE: Theory of the Smith-Purcell effect	
SOURCE: IVUZ. Radiofizika, v. 9, no. 2, 1966, 341-350	
TOPIC TAGS: electromagnetic wave, electromagnetic wave generation, diffraction grating, electromagnetic radiation, reflector diffraction grating, electron beam	
ABSTRACT: Previous authors' works (e.g., Zh. T. F., v. 36, 34, 1966) established a strong dependence of the intensity of electromagnetic-wave radiation on the width of metal strips that form the grating. The present article investigates the electro-magnetic-wave radiation by a modulated electron beam traveling over a reflecting diffraction grating. The radiation energy characteristics of this grating are compared to those of a strip-type grating and a grating formed by rectangular-cross-	
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I. 41756-66

ACC NR: AP6011919

section bars. The effect of the grating profile on radiation is analyzed. Optimal parameters of the beam and the grating are determined for the case when the effects of the space charge and reaction (influence of radiation on the beam) are neglected. It is found that: (1) With a specified current, the electron beam must be as thin as possible and must be kept as close to the grating as possible; (2) The diffraction-grating profile has an important bearing on the radiated power and the directional pattern; (3) The radiation caused by a nonmodulated electron beam is noncoherent; the degree of coherence can be controlled by modulation. Orig. art. has: 6 figures and 36 formulas.

SUB CODE: 20, 09 / SUBM DATE: 30Jun65 / ORIG REF: 008 / OTH REF: 004

Card 2/2

ACC NR, AR7000888

SOURCE CODE: UR/0058/66/000/009/H025/H026

AUTHOR: Chernyakov, E. I.; Tret'yakov, O. A.; Shestopalov, V. P.

TITLE: Theory of the Vavilov-Cherenkov effect for the motion of electron fluxes above a complex interface

SOURCE: Ref. zh. Fizika, Abs. 9Zh190

REF SOURCE: Radiotekhnika. Resp. mezhved. nauchno-tekhn. sb., vyp. 1, 1965, 142-148

TOPIC TAGS: electron flux, electromagnetic wave, Vavilov Cherenkov effect, vacuum dielectric boundary, electromagnetic wave radiation

ABSTRACT: The problem of electromagnetic wave radiation by a plane monochromatic electron flux moving above an infinitely long ribbon grid placed on the vacuum-dielectric interface is investigated. It is shown the infinite system of equations determining radiation field partial wave amplitudes can be reduced of a system which may be conveniently solved numerically by a computer. General conclusions are obtained on radiation field frequency, which is determined by the

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ACC NR: AR7000888

modulation frequency of the beam, and on the radiation direction which forms a discrete spectrum analogous to a diffraction spectrum. N. Khizhnyak. [Translation of abstract] [DW]

SUB CODE: 20/

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ACC NR: AR7000889

SOURCE CODE: UR/0058/66/000/009/11026/11026

AUTHOR: Tsvyk, A. I. ; Tret'yakov, O. A.

TITLE: Electromagnetic wave radiation by a limited plane electron flux moving above a diffraction grating

SOURCE: Ref. zh. Fizika, Abs. 9Zh191

REF SOURCE: Radiotekhnika. Resp. mezhved. nauchno-tekhn. sb., vyp. 1, 1965, 149-154

TOPIC TAGS: electron flux, electromagnetic wave, electromagnetic wave radiation, diffraction grid

ABSTRACT: The problem of electromagnetic-wave radiation by a plane monochromatic electron flux of finite width moving above an infinitely long ribbon grid is studied. It is shown that the infinite system of linear algebraic equations, which determines the radiation field partial wave amplitudes, can be reduced to a system convenient for a numerical solution by a computer. The discrete spectrum of radiation directions is determined. A special case of realization of the radiation

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ACC NR: AR7000889

condition for only the first harmonic is investigated. For this case the integral  
radiated power is found in the close form. [DW]

SUB CODE: 20/

Ccrd 2/2

BAREGAMYAN, V.A.; TRET'YAKOV, O.A.; CHERNYAKOV, E.I.; SHESTOPALOV, V.P.

Radiation from an electron beam moving parallel to a metal grating placed on the boundary of a uniaxial crystal of finite thickness. Izv. AN Arm. SSR, Ser. fiz.-mat.nauk 18 no.5:90-96 '65. (MIRA 18:12)

1. Yerevanskiy gosudarstvennyy universitet i Khar'kovskiy institut gornogo mashinostroyeniya, avtomatiki i vychislitel'noy tekhniki.

NOVOPOL'SKIY, V.I.; TRET'YAKOV, O.B.

Investigating the slipping of the elements of the tread pattern in the contact area of automobile tires. Kauch. i rez. 22 no.11:24-27 N '63. (MIRA 17:2)

1. Nauchno-issledovatel'skiy institut shinnoy promyshlennosti.

DMITRIYEV, A.P., dotsent; DOBROVOL'SKIY, G.N., inzh.; KUZUYAYEV, L.S., inzh.;  
TRET'YAKOV, O.N., inzh.; YAMSHCHIKOV, V.S., inzh.

Determining certain physical properties of rock for estimating  
their drillability by thermal piercing. Izv. vys. ucheb. zav.;  
gor. zhur. no.8:86-90 J1 '64 (MIRA 18:1)

1. Moskovskiy institut radioelektroniki i gornoy elektromekhaniki.  
Rekomendovana kafedroy fiziki gornykh porod.

PRETYAKOV, O.V., kapitan-leytenant

Our experience in exercises with young sailors. Mor. stor. 47  
no.8:53-56 Ag 1964. (MIRA 12:7)

TRET'YAKOV, O.V., kapitan-leytenant

Single evaluation system in combat training. Mor. sbor. 44 no.5:  
52-55 My '61. (MIPA 16:5)  
(Naval art and science—Examinations, questions, etc.)

110 7/15/57  
PLAKSIN, I.N.; ZAYTSEVA, S.P.; STARCHIK, L.P.; TRET'YAKOV, O.V.; TYURNIKOVA,  
V.I.; SHAFREYEV, R.S.

Studying the reaction of reagents and minerals in flotation by the  
microautoradiographic method. Zav. lab. 23 no.3:313-316 '57.  
(MLRA 10:6)

1. Institut gornogo dela Akademii nauk SSSR.  
(Radiography) (Flotation)

SOV/24-58-7-32/36

AUTHORS: Plaksin, I.N., Tyurnikova, V.I. and Tret'yakov, O.V.

TITLE: Distribution of Xanthates on the Surface of Sulphide Minerals in Relation to the Length of the Hydrocarbon Radical (Raspredeleniye ksantogenatov na poverkhnosti sul'fidnykh mineralov v zavisimosti ot dliny uglevodородного radikala)

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye tekhnicheskikh nauk, 1958, Nr 7, pp 146 - 148 (USSR)

ABSTRACT: The authors, in collaboration with L.P. Starchik, have developed a method of quantitative radiography. Using it (Ref 1) they have found that above a certain concentration of reagent on the mineral surface it is the distribution that affects flotation. The method is based on counting the number of developed silver particles on microradiograms of the mineral grains and of a standard. The reagent contains radioactive sulphur as a tracer. The standard is prepared by evaporation of a drop of aqueous xanthate solution, the resulting layer of radioactive reagent being covered with a protective layer. The quantity of reagent required to produce a grain of silver is calculated and used to deduce local reagent concentrations

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SOV/24-58-7-32/36

Distribution of Xanthates on the Surface of Sulphide Minerals in Relation to the Length of the Hydrocarbon Radical

on the mineral particles from silver-grain counts. For a quantitative measure of non-uniformity the authors have used the variational coefficient (Ref 3). They outline the determination of its value in the general case and for their experiments with ethyl, butyl and iso-amyl xanthates on zinc blende. The total adsorption of the reagents for oxygen concentrations in the solution of 0, 16, 10 and 36 mg/litre was also found. The tests covered a pH range of 7.0 - 12.5, the effect of lime being different for the different xanthates. Figures 1, 2, 3 show the values of the coefficient (%) of non-uniformity plotted against lime consumption (kg/ton) for ethyl, butyl and iso-amyl xanthates on sphalerite for various oxygen contents in the pulp. In all tests, ethyl xanthate was distributed more uniformly than butyl or isoamyl xanthates on the mineral surface. There are 3 figures, 2 tables and 5 Soviet references.

SUBMITTED: January 20, 1958

Card 2/2

PLAKSIN, I.N. (Moscow); TYURNIKOVA, V.I. (Moscow); TRET'YAKOV, O.V.  
(Moscow)

Relationship between the distribution of xanthogenate on sulfide  
mineral surfaces and the length of the hydrocarbon radical.  
Izv. AN SSSR. Otd.tekh.nauk no.7:146-148 J1 '58. (MIRA 11:9)  
(Flotation)

TRET'YAKOV, O.V., kapitan-leytenant

Specialized training for personnel of small vessels. Mor.sbor.  
44 no.3:57-59 Mr '61. (MIRA 14:4)  
(Naval education)

TRET'YAKOV, P.

Foreign trade of Egypt in 1953-1955 [with summary in English,  
pp. 31-32]. Vnesh. torg. 26 no.10:19-23 O '56. (MLRA 9:12)

(Egypt--Commerce)

TRBT'YAKOV, P.G., kand.tekhn.nauk

Investigating the shielding insulation of high-temperature gas  
piping. [Trudy] LMZ no.6:373-381 '60. (MIRA 13:12)  
(Gas pipes) (Insulation (Heat))

TRET'YAKOV, P.G., kand.tekhn.nauk

Testing experimental oil cooler. [Trudy] LMZ no.6:382-388 '60.  
(MIRA 13:12)  
(Cooling)

TRET'YAKOV, P.G., kand.tekhn.nauk; LEVCHENKO, B.L., inzh.

Studying heat conditions in turbine casings with heated parts.  
Energomashinostroenie 5 no.3:1-7 Mr'59. (MIRA 12:3)  
(Steam turbines)

PAGE 1 BOOK EXPLOITATION SCI/NOIT

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Sponsoring Agency: NSCSP, Intelligentskiy ekonomicheskiy administrativnyy svyaz. Sovetskoye khozyaystvo. Upravleniye vyshelozhchikami. Moscow, U.S.S.R.

**K.I. A.S. ZIL'BERMAN**, Candidate of Technical Sciences; B.S., of Pribludnaya Str. 2, Krasnodar, 44-112 Simonsovskiy, Tech. Publishing House, 22, Krasnodar Rd. for literature on the Danish language; **V.Ye. ZIL'BERMAN**, (Scientific Division, Postage: 22, Peti and of Petrovskaya Str. 34-103, Bld. of Section A.S. ZIL'BERMAN, Kam. 40-7, Krasnodar, 44-112 ZIL'BERMAN, K.M. KOREN, Engineer; V.K. GANOV, Candidate of Technical Sciences) and I.N. Shtalbov, Engineer.

**PURPOSE:** This collection of articles is intended for engineering students and engineers in the field of turbine-construction plants and related technical personnel of turbine-construction plants and may also be used by engineers and technicians of power plants employing steam and gas turbines.

[illegible][illegible]

Lavchenko, B. L., Engineer. Modeling of the State of Stresses in the Shafts of Motor Blades of Steam and Gas Turbines 355

Yevchenko, B.L., Engineer. Investigation of the Self-Compensation of Piping on Models 363

**Belikov, P.O.** Candidate of Technical Sciences. Investigation of Screen Insulation for High-Temperature Gas Piping

card 8/11

TRET'YAKOV, P.G., kand.tekhn.nauk; LEVCHENKO, B.L., inzh.

Temperature testing of high-pressure turbines manufactured  
by the Leningrad Metalworking Plant. Teploenergetika 7 no.10:  
22-27 0 '60. (MIRA 14:9)

1. Leningradskiy metallicheskiy zavod.  
(Leningrad--Turbines--Testing)

83328

S/096/60/000/010/002/022

E194/E184

26.2/20

AUTHORS: Tret'yakov, P.G. (Candidate of Technical Sciences) and  
Levchenko, B.L. (Engineer)

TITLE: Temperature tests on a high-pressure turbine of the  
Leningrad Metal Works

PERIODICAL: Teploenergetika, 1960, No 10, pp 22-27

TEXT: In order to cut down the time required to start up turbines from the cold it is necessary to study the temperature distribution in the stator and rotor during steady state and transient conditions. Accordingly, the works laboratory has been testing turbines since 1953, paying particular attention to temperature distribution. Considerable experience has been gained of the temperature distribution in turbines during starting-up and cooling. The tests may be considered in two stages; the first was study of the main relationships of temperature change in turbines during starting and stopping, and the second was the application of various methods of altering the temperature distribution so as to control the heating and cooling of turbines. The test equipment used is described, particularly the general construction of the thermocouples used. Thermocouples were installed on the rotors and stators, a  
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E194/E184

Temperature Tests on a High-Pressure Turbine of the Leningrad  
Metal Works

considerable proportion of them being of the flanged joints. In the first stages of the tests between 300 and 400 thermocouples were used on the turbine, but later this number was reduced and it is now considered sufficient to make measurements at about 100 points on the stator and 50 on the rotor. The method of measuring clearances inside the turbine is briefly explained. Tests have been made after overnight shutdown for 6-8 hours, and week-end shutdown of 30-36 hours and also from the cold. The factory starting instructions were obeyed at first and then accelerated starts were made. The test results are reviewed; most of them have been previously published in this journal in the last two or three years. A cold turbine does not heat up much whilst the barring gear is in use and a hot one even cools down. Therefore, this period should be reduced as far as possible. The period during which the load is raised from 5 to 50% is particularly important as it is then that the greatest temperature differences occur. When the forward glands are shrunk onto the turbine shaft the most dangerous temperature difference is that between the glands and the shaft underneath them. If this

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Temperature Tests on a High-Pressure Turbine of the Leningrad Metal Works

exceeds 70 °C damage to the turbine may result. In general, the rotor heats up faster than the stator and so expands more, particularly if the stator is not well lagged. In this respect the relative masses of rotor and stator are most important and where this ratio has been upset, as in a turbine with very heavy flanges, operating difficulties have been experienced. As a result of the work accelerated starting conditions were developed which greatly reduced the starting times of the turbines. It was shown that further acceleration of the starting could not be achieved without using some other construction than shrinking on for the labyrinth glands, and this construction has been avoided in new designs. The main difficulties of starting are then transferred from the rotor to the stator and in particular thermal stresses are set up in the flanges and studs. However slow the start, the inside surfaces of the flanges always heat up faster than the outside and accordingly it was decided to heat the outsides of the flanges. Various arrangements for steam and electric heating of the flanges and studs are illustrated schematically in Fig 1. Graphs of changes in

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E194/E184

# Temperature Tests on a High-Pressure Turbine of the Leningrad Metal Works

temperature and temperature differences over the width of the flange during identical starts with and without heating are plotted in Fig 2, and it will be seen that heating is a very effective means of equalising the temperature distribution. By heating the flanges the starting time of one type of turbine could be reduced by a factor of 2-3 (see Fig 3). In the light of this work modern turbines are provided with heating of flanges and studs as a matter of course (see Fig 4). Electrical heating has also been tried: it is simple and easy to control and can more readily be applied to existing turbines than steam heating; though electrical heating is effective in reducing temperature differences it is not quite so good as steam, as will be seen from the temperature difference curves plotted in Fig 5. Study of turbine cooling showed that during shutdown the lower part of the frame cools the most rapidly so that a temperature difference is set up between the upper and lower parts, causing temperature strains (see Fig 6). If it is necessary to start the turbine whilst it is in this condition, it may be damaged. Accordingly, arrangements were made to heat the lower part of the

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E194/E184

Temperature Tests on a High-Pressure Turbine of the Leningrad Metal Works

frame electrically, and tests have shown that when such electrical heating is used it is possible to prevent the rapid cooling of the lower part of the frame (see Fig 7) and consequently to avoid the temperature strains. More uniform cooling is also achieved by improving the thermal insulation of the lower part. Analysis of test results has shown that there are a number of places at which temperature measurements can be made which will give good general guidance about the temperature condition of the turbine as a whole. Consequently, arrangements are now made to make measurements of this kind and to provide readings on the control panel. New methods of measuring stresses and clearances are being developed which will improve the effectiveness of the tests. The extensive experimental material available should make it possible to develop theoretical methods of calculating the heating and cooling of the turbines. It is first important to determine limiting conditions directly from experiment and to apply these in conjunction with modern computing techniques to assess temperature effects during the design stage of turbines.

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E194/E184

Temperature Tests on a High-Pressure Turbine of the Leningrad Metal Works

There are 7 figures and 5 Soviet references.

ASSOCIATION: Leningradskiy metallicheskiy zavod  
(Leningrad Metal Works)

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Card 6/6

TRET'YAKOV, P.G.; VELIKOVSKIY, A.S., kandidat tekhnicheskikh nauk.

Better and more widespread use of all-metal saw bands. Tekst. prom.  
17 no.4:19-22 Ap '57. (MLRA 10:4)

1. Nachal'nik tekhnicheskogo upravleniya Ministerstva legkoy pro-  
myshlennosti SSSR (for Tret'yakov).  
(Cotton carding)

ACCESSION NR: AP4025426

S/0096/64/000/004/0060/0062

AUTHOR: Tret'yakov, P. G. (Candidate of technical sciences)

TITLE: Calculations of transient heating in turbine bodies

SCOURCE: Teploenergetika, no. 4, 1964, 60-62

TOPIC TAGS: turbine start up, transient turbine heating, turbine temperature distribution, transient boundary conditions, turbine VPT 50 3 LMZ

ABSTRACT: The transient heating of turbine parts during start-up was considered experimentally and analytically. The one-dimensional heat equation was solved by approximating the boundary conditions of steam temperature ( $t_g$ ) and thermal diffusivity ( $\alpha$ ) by a series of step changes and assuming constant  $t_g$  and  $\alpha$  for each step interval. To obtain analytical expressions of  $t_g$  and  $\alpha$  during start-up, experimental results were obtained with turbine VPT-50-3 LMZ operating at  $p = 90$  atm and  $t = 500^\circ\text{C}$ . It was found that the following empirical relations existed: a) uncooled turbine start-up (metal at  $\approx 200^\circ\text{C}$ ):  $\alpha = 20 + 0.075n + 1200$

$\left(\frac{N}{N_0}\right)^{0.7} \text{ kcal/m}^2 \cdot \text{hr} \cdot ^\circ\text{C},$

Card - 1/3

$$t_n = 170 + 155 \left(\frac{n}{n_0}\right)^{\frac{1000}{n}} + 100 \left(\frac{N}{N_0}\right)^{0.7} e^{\frac{N}{N_0}}, ^\circ\text{C},$$

ACCESSION NR: AP4025426

b) cooled turbine start-up (metal  $< 1000$ ):

$$q = 50 + 0,075n + 1200 \left( \frac{N}{N_0} \right)^{0.4}, \text{ kcal/m}^2 \cdot \text{hr} \cdot \text{degree},$$

$$t_n = 100 + 215 \left( \frac{n}{n_0} \right)^{\frac{3000}{n_0}} + 110 \left( \frac{N}{N_0} \right)^{0.4} e^{\frac{20}{N_0}}, \text{ } ^\circ\text{C};$$

(where  $n$  = RPM,  $N$  = load in given interval,  $\theta$  = duration of load). Using these equations, the temperature transients for a different turbine (VPT-50-3) were calculated and compared with experimental results. Figure 1 on the Enclosure shows a comparison of experimental and theoretical results for two test runs of this turbine. Orig. art. has: 5 figures and 12 formulas.

ASSOCIATION: Leningradskiy metallicheskiy zavod (Leningrad Metal Factory)

SUBMITTED: 00

DATE ACQ: 20Apr64

ENCL: 01

SUB CODE: AS

NO REF SOV: 002

OTHER: 000

Card 2/3

ACCESSION NR: AP4025426

ENCLOSURE: 01

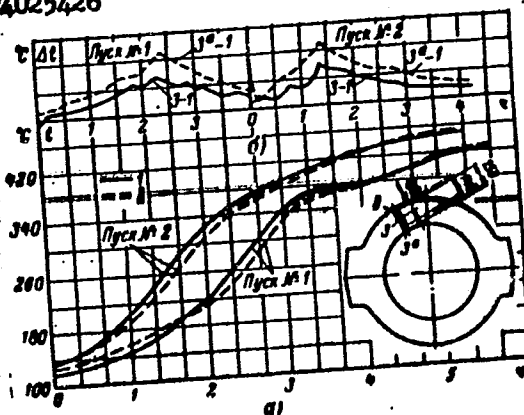


Fig. 1: Start-up from cold conditions,  
a) temperature at point 2; b) temperature difference  
across wall; 1- experimental values; 2- calculated values.

Card 3/3

TRFT'YAKOV, P.G., kand. tekhn. nauk

Calculation of the heating of a turbine housing. Teploenergetika  
11 no.4:60-62 Ap '64. (MIRA 17:6)

1. Leningradskiy metallicheskiy zavod.

TRET'YAKOV, P.G., inzh.

VPT-50-3 turbine starting tests. Energomashinostroenie 6 no.6:48  
Je '60. (MIRA 13:8)

(Steam turbines---Testing)

TRET'YAKOV, P.G.

Screen and air-cooling heat protective devices. Trudy LKI no.32.  
215-220 '62. (MIRA 16:7)

1. Kafedra nachertatel'noy geometrii Leningradskogo korablestroitel'nogo instituta.  
(Marine turbines--Godling)

ACC NR: AP7005384

(N)

SOURCE CODE: UR/0114/67/000/001/0004/0007

AUTHOR: Tret'yakov, P. G. (Candidate of technical sciences; Docent); Suzdal'tseva, N. F. (Engineer)

ORG: none

TITLE: Temperature state of elements of the GTN-9-750 gas turbine installation built by the Leningrad Metalworking Plant im. 22nd CPSU Congress

SOURCE: Energomashinostroyeniye, no. 1, 1967, 4-7

TOPIC TAGS: gas turbine installation, turbine design, turbine cooling, temperature distribution /GTN-9-750 gas turbine installation, EPP-09 potentiometer

ABSTRACT: The GTN-9-750 gas turbine installation is designed for the initial gas temperature  $T = 750^{\circ}\text{C}$ . The design of its combustion chamber and of the stator section of its high-pressure turbine (h.p.t.) provides for extensive air cooling which makes it possible to use pearlitic steel as the material of the h.p.t. housing and the combustion chamber as well as of many other elements. The operating reliability of these elements thus depends on the efficiency of their heat insulation, which assures the specified temperature level and a uniform temperature field. To verify whether the temperature distribution of elements of the stator

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UDC: 621.438:536.5.001.5

ACC NR: AP7005384

and the combustion chamber and the efficiency of cooling and heat insulation satisfied the design specifications operating trials of these elements were carried out on equipping them with 250 thermocouples for measuring the temperatures of the metal, cooling air and insulating surfaces. These thermocouples were linked to EPP-09 potentiometers. The maximum rates of heating and cooling of the metal were thus determined and temperature imbalances in the elements during startup and cooling of the turbine uncovered. The findings were collated on temperature charts. Analysis of the findings shows that the level of temperatures in all the investigated turbine elements does not exceed the rated level and in some cases is even below it. The temperature state of the combustion chamber must be considered satisfactory, but can be further improved considering that in some of its zones and particularly in the region of the mixing nozzles the temperature imbalances reach 100-180°C, and that the temperatures of the gas flow could be made more uniform. In certain elements such as the diaphragm ring and the inner and outer cylinders complete airtightness of the cooling system could not be accomplished despite additional adjustments. Orig. art. has: 2 figures, 1 table.

SUB CODE: 10. ~~29-11~~ / SUBM DATE: none / ORIG REF: 002

Card 2/2

TRET'YAKOV, P. N.

Historiography - Poland

Conference of Polish historians, Vest. AN SSSR, 22, No. 6, 1952.

Monthly List of Russian Accessions, Library of Congress, November 1952. Unclassified

1. TRET'YAKOV, P. N., ENG., KRUSHINOV, A. G.
2. USSR (600)
4. Valves
7. Operation of spring safety valves. Rab.energ. 2 no 10, 1952.

9. Monthly List of Russian Accessions, Library of Congress, JANUARY 1953. Unclassified.

TRET'YAKOV, Pavel Nikolayevich; GONCHAROV, L.V., otv. red.;  
SHTEMPEL', M.I., red.; YAZLOVSKAYA, E.Sh., tekhn. red.

[Economic independence and two types of aid to African  
countries] Ekonomicheskaya nezavisimost' i dva vida pomo-  
shchi stranam Afriki. Moskva, Izd-vo vostochnoi lit-ry,  
1963. 100 p. (MIRA 16:4)

(Africa--Economic conditions)  
(Africa--Economic assistance, American)  
(Africa--Economic assistance, Russian)

*1. Vsesoyuznyy nauchno-issledovatel'skiy institut gidroliznoy i  
sul'fitno-spirovoy promyshlennosti*  
TUMT'YAKOV, P.N., kandidat ekonomicheskikh nauk

Raw material computations in the hydrolysis industry. Gidroliz.  
i lesokhim prom. 8 no.1:23-24 '55. (MLRA 8:10)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut gidroliznoy i  
sul'fitno-spirovoy promyshlennosti  
(Wood chemistry) (Distilling industries)

*TRET'YAKOV, P.N.*  
KOZLOV, A.I.; TRET'YAKOV, P.N.

Results of and prospects for the development of the hydrolysis  
industry in the U.S.S.R. Gidroliz. i lesokhim. prom. 10 no.7:7-12  
'57. (MIRA 10:12)

1.Vsesoyuznyy nauchno-issledovatel'skiy institut godroliznoy i  
sul'fitnospirovoy promyshlennosti.  
(Hydrolysis)

GONCHAROV, Leongard Vasil'yevich; KIRICHENKO, Galina Abramovna;  
TRET'YAKOV, P.N., otv. red.; PAVLOV, A.G., red.;  
YAZLOVSKAYA, E.Sh., tekhn. red.

[The "Common Market" and African countries] "Obshchii rynok"  
i strany Afriki. Moskva, Izd-vo vostochnoi lit-ry, 1963. 70 p.  
(MIRA 16:4)

(European Economic Community countries--Foreign economic relations--  
Africa)

(Africa--Foreign economic relations--European Economic Community  
countries)

VYZHAROVA, Zhivka Nikolovna; TRET'YAKOV, P.N., otvetstvennyy redaktor;  
TRAKHTENBERG, I.S., redaktor izdatel'stva; ZEMLYAKOVA, T.A.,  
tekhnicheskiiy redaktor

[The origin of Bulgarian plowing tools; on the problem of the  
ethnogenesis of the Bulgarian people] O proiskhozhdenii bolgarskikh  
pakhotnykh orudii; k voprosu ob etnogeneze bolgarskogo naroda.

Moskva, Izd-vo Akademii nauk SSSR, 1956. 53 p. (MLRA 10:3)

(Plows) (Bulgaria--History)

TRET'YAKOV, P.N.

KOZLOV, A.I., kand.ekonomicheskikh nauk; TRET'YAKOV, P.N., kand.ekonom.nauk

Technical and economic efficiency of the hydrolysis industry.

Khim.nauka 1 prom. 2 no.4:489-492 '57.

(MIRA 10:11)

(Hydrolysis)

TRETYAKOV, Pavel N.

"Ways and means of mobilizing country's own resources for economic promotion of newly evolved African countries"

reports to be submitted for the United Nations Conference on the  
Application of Science and Technology for the Benefit of the Less  
Developed Areas - Geneva, Switzerland, 5-10 Feb 63

TRET'YAKOV, Pavel Nikolayevich, kand.ekonom.nauk; LIVSHITS, Ya.L., red.;  
SAVCHENKO, Ye.V., tekhn.red.

[Economic and technical aid of the U.S.S.R. to industrially  
underdeveloped countries] Ekonomicheskaya i tekhnicheskaya  
pomoshch SSSR slaborazvitym v promyshlennom otnoshenii stranam.  
Moskva, Izd-vo "Znanie," 1960. 39 p. (Vsesoiuznoe obshchestvo  
po rasprostraneniю politicheskikh i nauchnykh znaniy. Ser.7,  
Mezhdunarodnaya, no.8). (MIRA 13:4)

(Economic assistance, Russian)  
(Underdeveloped areas)

TRET'YAKOV, P.N., kand.ekonom.nauk

Economic and cultural development of the Malagasy Republic.  
Vest. AN SSSR 34 no. 2:94-99 F '64. (MIRA 17:5)

Tret'yakov, Pavel Nikolayevich

Ekonomicheskaya nezavisimost' i dva vida pomoshchi stranam Afriki. Moskva, Izd-vo Vostochnoy Lit'ry, 1963.

100 p.

At head of title: Akademiya Nauk SSSR. Institut Afriki.

Bibliographical footnotes.

22

101

Testing cracked gasolines in the aviation motor M-17.  
P. P. Tsiyakov and N. P. Kaidash. *Neftyanoe Khoz.*  
1938, No. 12, 23-5. —A gasoline with an end point of 180°,  
treated with 1%  $H_2SO_4$  and stabilized with 50 mg. per 100  
cc. of a wood-tar fraction b. 200-280° derived from decidu-  
ous trees can be used in aviation motors of the type M-17.  
A detailed analysis of the gasoline and its performance is  
given and the performance of the lubricating oil used in  
the test is discussed.  
A. A. Bochtlingk

ASME-31A METALLURGICAL LITERATURE CLASSIFICATION

67

Effect of the concentration of inhibitors on the "performance characteristics" of cracked gasoline. P. I. Tret'yakov. *Nefteprom KAZ*, 1940, No. 2, 26 U. In "High" gasoline, increasing concns. of phenol inhibitors have a progressively decreasing effect in prolonging the induction period. With increasing concn. of inhibitors, stability of the gasoline under operating conditions increases. To increase the stability of cracked aviation gasolines the concn. of the inhibitor ( $\alpha$ -naphthol, wood tar) must be 1.5 to 2 times that used at present. A. A. B.

ASB-51A METALLURGICAL LITERATURE CLASSIFICATION

**Stability during storage of cracked gasoline containing inhibitors.** P. P. Tret'yak, *Nefteyane Khim.* 20, No. 10 11, 327 (1939); *Chemie & Industrie* 44, 112 (1940). Pumping cracked gasoline during 30 min. at 0°, 20° and 30° gives rise to a decrease of 30-50% in the induction period, but produces only a very slight variation in the actual gum content (except in the case of rubber piping) and peroxide content. Cu, and in some cases Fe and rust, considerably affect the stabilizing power of inhibitors such as wood-tar fractions or  $\alpha$ -naphthol. The other common metals are practically without action. Dilm. of cracked gasoline with straight-run gasoline increases the induction period of the former by about 10%. Addn. to such a 1 l. mixt. of 1 cc. per kg. of Phlitz, shortens the induction period by about 20-25%. A. Papayan-Cantow.

### A Captivating Costume

ASME-STEEL METALLURGICAL LITERATURE CLASSIFICATION

1. KOPELEV, G. Ya., Eng.; TRET'YAKOV, P. T.
2. USSR (600)
4. Electric Transformers
7. Unloading 80 tons transformers, Elek. sta., 23, No. 11, 1952.
9. Monthly List of Russian Accessions, Library of Congress, February 1953, Unclassified.

TRET'YAKOV, R.V.

Loss of water and the re-establishment of turgor in the leaves  
of cut plants after intense wilting as indices of the drought  
resistance of plants. Sbor. trud. asp. 1 mol. nauch. sotr. VIR  
no.5:217-224 '64. (MIRA 18:3)

LEBEDEV, Boris Mikhaylovich, inzh.-mekhanik; TRET'YAKOV, S.A.,  
red.

[Repair of machines in construction shops] Remont mashin  
v masterskikh stroitel'stva. Moskva, Transport, 1964.  
222 p. (MIRA 17:12)

84210

S/119/62/000/003/001/001  
D201/D303

26.2190  
AUTHOR:

Tret'yakov, S.I.

TITLE:

Circuits of a two-position electronic temperature controller with accelerating and follow-up arrangements

PERIODICAL: Priborostroyeniye, no. 3, 1962, 1 - 4

TEXT: The analytical and experimental analysis of various types of two-position control with delay and with or without feedback has shown that the shift in the oscillation axis in two-position feedback control may occur both up and down. The above effect underlies the basic circuit of the improved controller described in the present article. It is essentially a controlling potentiometer type ЭПД -12 (EPD-12) and retains its main composite parts: Measuring bridge, a chopper, input, transformer, an electric amplifier and reversible motor. the difference being that the described controller has cams on the shaft of the reversible motor; these cams determine the range of operation and form a follow-up system for keep-

Card 1/3

X

Circuits of a two-position ...

S/119/62/000/003/001/009  
D201/D303

ing the controlled quantity at a pre-set level. The contacts of this follow-up system govern the electrical circuits of the executive mechanism by means of intermediary solenoids and mercury contacts. The accelerating arrangement designed to lower the amplitude of oscillation, has the form of a negative feedback on a double-triode circuit as used in the first stage of type 9P -T -54 (ER-T-54) electronic controller of the VTI system. The operation of the controller is described when the main power source is weaker than required, and is connected directly to the object while a secondary power source is controlled; simultaneous connection of the latter with the main source results in a greater power than required by the object. This connection corresponds to the pulse 'more' and disconnection to the pulse 'less'. When the load changes and thus provides a disturbance, one of the discs at the motor shaft produces, by means of the switching circuit, either 'more' or 'less' pulses and changes accordingly the thermal energy supplied to the object. Decrease in the oscillation amplitude is obtained by a delayed negative feedback. The average value of the controlled quantity is maintained by a certain non-uniformity of the control by

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Circuits of a two-position ...

S/119/62/000/003/001/009  
D201/D303

the discs and by the fact that the control is taken over either by one disc or the other. Admissible non-uniformity reduces the control range. Some objects of control have considerable non-linearity of characteristics, and therefore, an electronic interruptor is provided in the amplifier which can be adjusted to the magnitude of time delays in the system. There are 1 figure and 4 references: 2 Soviet-bloc and 2 non-Soviet-bloc.

Card 3/3

X

TRET'YAKOV, S.A.

Circuits of an electronic two-position thermostat with accelerating  
and follow-up devices. Priborostroenie no.3:1-4 Mr '62.

(MIRA 15:4)

(Thermostat)

TRET'YAKOV, S.A.

Methods of engineering calculation of the dynamics of two-position  
control of thermal processes. Priborostroenie no.7:3-6 J1 '62. ...  
(MIRA 15:7)

(Furnaces)

(Automatic control)

S/119/62/000/007/001/006  
I045/I245

AUTHOR: Tret'yakov, S. A.

TITLE: Engineering calculations of the dynamics of the on-off regulation of thermal processes

PERIODICAL: Priborostroyeniye, no. 7, 1962, 3-6

TEXT: The calculations described are applicable to simple regulators as well as to regulators incorporating "speed up" devices for improvement of their performance. The method approximates the transfer characteristics of a regulator by an exponential curve with a preceding delay segment. The types analyzed are a) on-off regulation without feedback, b) on-off regulation with feedback, c) regulation with "partial flow" (main, unregulated heat source and additional regulated heat source). The method allows a simple and fast evaluation of the characteristics of the process and can give the same results as those obtained by more exacting methods. There are 5 figures. ✓

Card 1/1

ACC NR: AR7000895

SOURCE CODE: UR/0058/66/000/009/H035/H036

AUTHOR: Tret'yakova, S. S.

TITLE: Dispersion equations for a double-ring waveguide

SOURCE: Ref. zh. Fizika, Abs. 9Zh254

REF SOURCE: Radiotekhnika. Resp. mezhved. nauchno-tekhn. sb., vyp. 1, 1965, 30-35

TOPIC TAGS: dispersion equation, superhigh frequency, electrodynamics,  
~~electrodynamics equation, superhigh frequency electrodynamics~~, waveguide,  
*VECTOR, FOURIER SERIES*

ABSTRACT: A theoretical analysis is made of the propagation of azimuthally homogeneous E- and H-type waves in a periodic structure consisting of two axially situated ring waveguides with different diameters. The rings are assumed to be ideally conducting, infinitely thin, and situated directly one above the other. The vectors of the fields both inside and outside the waveguides are described by Fourier series in terms of Bessel and Hankel functions. Starting from Maxwell's equations the author writes the field components of the E- and H-waves for each

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ACC NR: AR7000895

one of the following areas: inside the small-diameter waveguide, between the two waveguides, and outside the large-diameter waveguide. The introduction of boundary conditions results in infinite systems of linear algebraic equations for Fourier coefficients. These equations are derived for the case of a waveguide with a large radius and a period which is small in relation to the length of the wave. Dispersion equations are obtained for the E- and H-waves by equating to zero the determinants of the derived systems. The presence in the elements of these determinants of factors approaching zero with increasing order of the element is said to make it possible to limit oneself to an analysis of the determinants of a finite order. Dispersion equations are given for a case of zero approximation. [Translation of abstract]

[SP]

SUB CODE: 09, 12/

Card 2/2

TRET'YAKOV, T

N/5  
632.898  
.T7

Primeneniye Novoy Sistemy Orosheniya V Kolkhoze (Application of a New System of Irrigation in the Kolkhoz, by) T. Tret'yakov (I) YE. VELICHKO (Krasnodar) Krasnodarskoye Knizhnoye Izd-Vo, 1954.  
52 P. Illus., Diagr., Tables.

1. TRET'YAKOV, T.
2. USSR (600)
4. Collective Farms
7. Following Stalinist statutes. kolkh. proizv. 12, no. 11, 1952.
9. Monthly List of Russian Accessions, Library of Congress, March 1953. Unclassified.

TRET'YAKOV, T.

Woodworking combine improves production. Na stroi. Ros. 3  
no.10:31 0 '62. (MIRA 16:6)

1. Glavnyy inzh. derevoobrabatyvayushchego kombinata tresta  
Chelyabmetallurgstroy.  
(Woodworking industries)

TRET'YAKOV, V.

Anatolii D'iachuk trains motorcycle drivers. Za rul. 18 no.4:4 Ap  
'60. (MIRA 13:8)

1. Instruktor obkoma Dobrovol'nogo obshchestva sodeystviya armii,  
aviatsii i flotu, Magadan.  
(Magadan--Automobile drivers)

TRET'YAKOV, V.

Device for changing the spring bearings of the Moskvich automobile.  
Avt.transp. 34 no.9:32 S '56. (MLRA 9:11)  
(Automobiles--Springs)

TRET'YAKOV, V. (g.Riga); ONDZUL, P. (g.Riga)

Simple transistorized receiver for hospital wards. Radio no.8:  
39 Ag '60. (MIRA 13:9)

(Transistor radios)

TRET'YAKOV, V. (Leningrad); LEBEDEV, B. (Leningrad)

A gift of humanity; a popular science film. Zdorov'e 8 no.3:32  
Mr '62. (MIRA 15:4)

(MOTION PICTURES IN MEDICINE) (CHILDBIRTH)

SAFAR'YANTS, E.; KUZNETSOV, V., prof.; ABDUNAZAROV, N.; HABAYEV, M.;  
TRET'YAKOV, V.

Norms for the output of meat products. Mias. ind. SSSR 30 no.5:28-29  
'59. (MIRA 13:1)

1. Glavnyy vetvrach Ashkhabadskogo myasokombinata (for Safar'yants).
2. Turkmenskiy sel'skokhozyaystvennyy institut (for all except Sarfar'-  
yants).

(Meat industry)

TRET'YAKOV, V., DOBRYANSKIY, PROF. A. , NIKHAMOV, I., ALEKSANDROVICH, O.

Ochistka Gaza Fenolyatnym Rastvorom, Goryuchiye Slantsy, 1935, No., 42

SO:

Goryuchiye Slantsy # 1934-35, TN .871  
G..74

KUZNETSOV, V., prof.; TRET'YAKOV, V., kand. vet. nauk; SAFAR'YANTS, E.

Weight losses during the preslaughter holding of Karakul  
sheep after their feeding with cottonseed hulls. Mias. ind.  
SSSR 34 no.5:33-34 '63. (MIRA 16:11)

1. Turkmenskiy sel'skokhozyaystvennyy institut (for  
Tret'yakov). 2. Ashkhabadskiy myasokombinat (for Safar'yants).

TRET'YAKOV, V.

Determining the effectiveness of cleaning grain on seed  
separators. Muk.-elev. prom. 29 no.4:12 Ap '63.

(MIRA 16:7)

1. Voronezhskiy sel'skokhozyaystvennyy institut.  
(Grain--Cleaning)

TRET'YAKOV, V.

For an improved performance of grain cleaning machines. Muk.-  
elev. prom. 28 no.1:28 Ja '62. (MIRA 16:7)

1. Voronezhskiy sel'skokhozyaystvennyy institut.  
(Grain—Cleaning)

YELISEYEV, S.V., dotsent, kand. tekhn. nauk; TRET'YAKOV, V.A., inzh.

Structural characteristics of modern precision instruments for  
measuring angles. Izv. vys. ucheb. zav.; geod. i aerof. no.1:95-102  
'59. (MIRA 12:5)

1. Moskovskiy institut inzhenerov geodezii, aerofotes"yemki i  
kartografii (for Yeliseyev). 2. Zavod aerogeodezicheskikh instrumentov  
(for Tret'yakov)  
(Theodolites)

3(4) .  
AUTHORS: 1) Yelisseyev, S. V., Candidate of SOV/154-59-1-10/19  
Technical Sciences; Docent, 2) Tret'yakov, V. A., Engineer

TITLE: Characteristics of the Construction of Modern High-precision  
Angle-measuring Instruments (Osobennosti konstruktivnykh sovremennykh vysokotochnykh uglomernykh instrumentov)

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Geodeziya i aerofotos-  
yemka, 1959, Nr 1, pp 95-102 (USSR)

ABSTRACT: The classical construction of a theodolite is the triangulation theodolite TT-2"/6" developed at the TsNIIGAIK by P. I. Shelavitelev, Ye. V. Fefilov, and I. A. Korol'kov according to the principles suggested by F. N. Krasovskiy. A survey on the development of this classical construction abroad is given here, and it is shown that in the construction of high-precision angle-measuring instruments preference should be given to the "optical" theodolites. The second part of the present paper shows that in the USSR "optical" theodolites of high accuracy are being developed at present. The triangulation theodolite TT-2"/6" and the optical theodolite OT-02 are produced at present by the zavod Aerogeoinstrument ("Aerogeoinstrument" Works). Individual drawbacks of

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Characteristics of the Construction of Modern High-precision Angle-measuring Instruments

SOV/154-59-1-10/19

these instruments are pointed out. At the end of 1957 the same factory produced an experimental type of the high-precision optical theodolite of the TVO-1 type. It serves for measuring horizontal angles and zenith distances in points of the triangulation of first order. The technical data of the instrument are given. Its most essential features are: the vertical axial system is a conical one, adjustment is done as for the TT-2"/6"; the telescope has an object-lens focal distance of 500 mm; the horizontal circle is made of glass with a diameter of 160 mm; one reading microscope for the vertical and horizontal circle and one wedge micrometer by means of which one can read off by two points (division lines); the instrument ensures normal work at temperatures between  $-25^{\circ}\text{C}$  and  $+50^{\circ}\text{C}$ ; the instrument has a put-on level with a graduation of 4", a level on the alidade of the vertical circle with a graduation of 10", a control telescope (which no other optical instrument has got) and optical centering; the main telescope is an astronomical telescope and consists of a double object lens with focusing lens; an optical micrometer (in form of a rocking plane-parallel

Card 2/3

Characteristics of the Construction of Modern High-precision Angle-measuring Instruments

SOV/154-59-1-10/19

small plate) and three exchangeable eyepieces. The instrument is being tested at present in the laboratory and at field work. According to preliminary statements, the results in the measurement of angles (in angle measuring) are the same as with the help of the triangulation theodolite TT-96. There are 6 figures.

ASSOCIATION: 1) Moskovskiy institut inzhenerov geodezii, aerofotos"yemki i kartografii (Moscow Institute of Geodesy, Aerial Survey, and Cartography (Veligzhev); 2) Zavod Aerogeodezicheskikh instrumentov (Factory of Aerogeodetic Instruments) (Tret'yakov)

Card 3/3

TRET'YAKOV, Vasiliiy Andreyevich; SELEZNEV, N.G., red.; PULIN, L.I.,  
tekhn.red.

[In over-all mechanization lies the secret of success]  
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